INTRODUCTION
Carotid Artery Stenosis is an important cause of mortality and morbidity. Data is lacking about Azad Kashmir traditional risk factors like hypertension, diabetes mellitus, dyslipidaemia and smoking are important risk factors. Focal neurological signs are attributed to involved vasculature, duplex ultrasonography is usually employed to identify culprit vessel. According to guidelines duplex ultrasound is used initially particularly in symptomatic individuals. Other modalities like MRA and CTA are very costly and not available in Azad Kashmir. Ultrasound imaging plays an important role in early detection of carotid atherosclerotic disease since it is able to quantify plaques formed and estimate the degree of carotid stenosis present. The technique allows determination of the severity of carotid stenosis by evaluating the extent of atherosclerotic changes and echo patterns within the vessel, using real-time b-mode ultrasound coupled with color and spectral imaging techniques (duplex ultrasound). In general duplex ultrasound is regarded as reliable for delineating atherosclerotic plaques with or without calcification. It is also useful in determining the severity of obstruction, the intima and media thickness, and the anatomical site. Carotid blood flow velocities can be analysed with the aid of carotid Doppler waveform analysis, which further assists in diagnosis another advantage of carotid ultrasound is that it is non-invasive and more readily accepted by the patient.
cranial carotid artery disease. Carotid duplex ultrasound imaging is indicated for carotid bifurcation imaging, limitations being visualizations of proximal carotid arteries and intracranial portions. Carotid duplex ultrasonography has shown to provide detailed information of plaque morphology.

And has tendency to overestimate the degree of carotid stenosis. CTA has promised better estimation of luminal stenosis than carotid ultrasound. The sensivity and specificity for diagnosing tight carotid stenosis with carotid duplex Doppler 88% and 84% respectively.

Different imaging techniques have been evolved recently to analyze carotid arterial Disease in detail which include contrast enhanced ultrasonography, CT angiography, Vulnerability of plaque to rupture is assessed by different techniques which is beyond the scope of our study. CT angiography, three dimensional ultrasonography when Compared to carotid duplex reveal more details.

Catheter based DSA is considered gold standard particularly when there are conflicting results with less invasive techniques, with renal impairment, obese patients and implanted ferromagnetic material plaque is defined as ‘a focal structure that encroaches into the arterial lumen by at least 0.5 mm or 50% of the surrounding IMT value or shows a thickness >1.5 mm as measured from the media-adventitia interface to the intima-lumen interface’. Plaques that are hypoechoic on duplex ultrasound are presumed to be associated with a higher stroke risk than echogenic lesions moreover, Histological analyses of carotid plaques and magnetic resonance imaging studies have shown that the finding of a lipid-rich, centrally necrotic plaque, a thinner ruptured fibrotic cap, or plaque hemorrhages is associated with an elevated cerebrovascular risk that the presence of plaque, defined subjectively or as a local thickening of>1.5 mm, might be predictive of cardiovascular outcomes.

Rational of the study was according to a recent data the prevalence of carotid artery stenosis varies significantly by race, in terms of social groups, those of ‘European descent’ demonstrated the highest incidence of stenosis. In the context of south African society this group is subject to a more western lifestyle that predisposes them to greater risk of atherosclerotic disease. This might indeed be exacerbated by hereditary factors subjecting them to this disposition. Higher carotid stenosis is also associated with urban living. Cultural and lifestyle changes due to urbanization also contribute to development of Type-2 DM, hypertension, increased blood cholesterol levels, smoking and increased BMI. Atherosclerotic carotid stenosis and coexisting coronary artery diseases as a part of generalized atherosclerosis are frequently seen.

RESULTS AND METHODOLOGY
This was prospective observational study 26 consecutive patients with symptoms suggestive of carotid Stenosis reported at Cardiac Outdoor from November 2011-2012 were included in our study. Approval was taken from ethical committee of Divisional Head Quarters Hospital Mirpur Azad Kashmir.

Inclusion criteria were both gender, above age 30 years, consent given, symptoms suggestive of Carotid Stenosis.

Exclusion criteria were below age 30 years, the patient who did not give consent.

All the patients suspected of symptoms suggestive of carotid vascular disease were sent to consultant radiologist for carotid duplex ultrasound sonography using machine model no. Eub-5500
Hitachi. Ultrasound for internal carotid artery stenosis has become the first line examination in most cases, and images both the macroscopic appearance of the artery as well as flow characteristics. All the patients were sent to consultant radiologist DHQ Hospital for carotid ultrasonography.

The Nascet criteria\textsuperscript{7} is as follows.

- No stenosis: normal wave form
- 15 % stenosis: Deceleration spectral broadening with a peak systolic velocity (PSV) of $< 125 \text{ cm/s}$, 16 - 49 % stenosis: Pan-systolic spectral broadening with a peak systolic velocity (PSV) of $< 125 \text{ cm/s}$, 50 - 69 % stenosis: Pan-systolic spectral broadening with a peak systolic velocity (PSV) of $> 125 \text{ cm/s}$ and End diastolic velocity (EDV) $< 110 \text{ cm/s}$ or ICA/CCA PSV ratio $> 2$ but $< 4$. 70 - 79 % stenosis: Pan-systolic spectral broadening with PSV $> 270 \text{ cm/s}$ or EDV $> 110 \text{ cm/s}$ or ICA/CCA PSV ratio $> 4$. 80 - 99 % stenosis: EDV $> 140 \text{ cm/s}$, Complete occlusion: no flow: terminal thump.

26 patients were found to have varying degree of carotid stenosis. There were twenty males (80.8\%) and six females (19.2\%) patients. Ages ranged from 47 to 80 years. Five patients (19.2\%) had mild disease, fifteen (57.7\%) had moderate disease five (19.2\%) had severe disease. Date of one patient was not interpretable for lesion severity. One patient had external carotid artery disease mean one S.D $\pm 56$, right common carotid artery was involved in three patients with mean 62.67 and S.D $\pm 2.121$, left common carotid artery was involved in 13 patients mean S.D $\pm 14.951$, while five patients had carotid artery bifurcation disease. Ten patients were found to have diabetes mellitus, ischemic heart disease was found in ten patients had hypertension & dyslipidaemia also found in seven patients. Giddness was found in ten patients (38.4\%), limb weakness was found in three patients (11.5\%) syncopy was found in three patients (11.5\%), carotid bruit was audible in three patients (7.6\%) and one patient presented with non specific symptoms (3.8\%). One patient had stroke. soft plaques were seen in five patients and calcified plaques in seven patients. Table-I shows gender distribution of patients under study, Table-II shows severity of carotid artery stenosis, Table-III shows percentages of diseased vessels, Table-IV shows risk factors for carotid stenosis and Table-V shows clinical presentation of carotid artery disease.

Tables 1-5 illustrate the results.

<table>
<thead>
<tr>
<th>Severity</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild disease</td>
<td>N=5 (19.02 %)</td>
</tr>
<tr>
<td>Moderate disease</td>
<td>N=15 (57.07 %)</td>
</tr>
<tr>
<td>Severe disease</td>
<td>N= 05 (19.02 %)</td>
</tr>
<tr>
<td>Not interpretable</td>
<td>N=01 (3.84 %)</td>
</tr>
</tbody>
</table>

Table-II. Severity of carotid artery stenosis

<table>
<thead>
<tr>
<th>Vessel</th>
<th>N</th>
<th>Mean 1 ± S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>External carotid artery</td>
<td>01  (03.84%)</td>
<td>56</td>
</tr>
<tr>
<td>Right common carotid</td>
<td>15  (57.69%)</td>
<td>10285</td>
</tr>
<tr>
<td>Right internal carotid</td>
<td>03  (11.53%)</td>
<td>2.121</td>
</tr>
<tr>
<td>Left common carotid</td>
<td>13  (50%)</td>
<td>14.951</td>
</tr>
<tr>
<td>Carotid bifurcation</td>
<td>5   (19.23%)</td>
<td>7.40</td>
</tr>
<tr>
<td>Left internal carotid artery</td>
<td>03  (11.53%)</td>
<td>9.23</td>
</tr>
</tbody>
</table>

Table-III. Percentages of diseased vessels
DISCUSSION
Our data is first data from Azad Kashmir about frequency and characteristics of carotid stenosis. Apart from traditional investigations like duplex ultrasound, there have been advancements in characterization of plaques particularly MRA has shown lot of promise. Similarly biomarkers are also being evaluated for symptomatic and asymptomatic plaques. In asymptomatic patients with known or suspected carotid stenosis, duplex ultrasonography, performed by a qualified technologist in a certified laboratory, is recommended as the initial test to detect hemodynamically significant carotid stenosis.

Currently importance is being given to various natures of plaque morphology apart from degree of stenosis as carotid stenosis is an important cause of stroke, three dimensional ultrasound of carotid has been developed to accurately enhance the nature of different lesions. Similarly there is growing emphasis on identifying high risk groups.

Even amongst asymptomatic patients. As no data is available about detection of carotid vascular disease in AJK and also no data is available about long term outcomes of carotid disease, this study will help determine true characteristics of this disease in AJK and will guide about choice of treatment which can be best medical treatment, carotid stenting and carotid end arterectomy. Carotid vascular disease and concomitant coronary disease has tremendous importance for both interventional cardiologist, cardiac surgeon and preventive cardiologist due to 20%-30% increase in risk of stroke along with possibility of permanent disability and overall mortality.

Usually carotid end arterectomy is performed before cardiac surgery if both diseases are present. Ocular pulse amplitude as a non invasive tool for screening of carotid artery stenosis is being studied. Self assessment and validation of diagnostic criteria has been recommended.

In very recent data although local data is available from different parts of our country, more studies are available for stroke patients than cardiac patients. Carotid vascular disease is being increasingly detected in kashmiri population. This was observed that there was early presentation in most of the patients with even mild disease, similarly bilateral involvement was common and response to best medical treatment was satisfactory as none of our patients underwent intervention.

CONCLUSIONS
Carotid Artery Stenosis is prevalent in AJ&K and can be easily diagnosed earlier by Carotid Duplex Ultrasound, to document the presence of Atherosclerosis and prevent from future complications of stroke.

STUDY LIMITATIONS
Limitations of study were interventions like carotid artery angiography and stenting along with carotid surgery are not possible locally, due to lack of facilities in Azad Kashmir similarly CT angiography and magnetic resonance angiography are currently not available in Azad Kashmir.
RECOMMENDATIONS
Carotid duplex ultrasound should be considered in patients who are particularly symptomatic and atherothrombosis risk factors are present like diabetes, hypertension, dyslipidaemia, smoking, and family history.

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REFERENCES


36. Marquardt, lars, and h. j. barnett. "carotid stenosis: to revascularize, or not to revascularize: that is the question." neurology 77.8 (2011): 710.


42. Alexandrov, andrei v., and laurence needleman. "carotid artery stenosis making complex assessments of a simple problem or simplifying approach to a complex disease?." stroke 43.3
The worst part of Success is trying to find someone who is happy for you.

Bette Midler